

REMARKS

Claims 1, 3, 4, and 6-12 are all the claims pending in the application. Please note that this Amendment has been formatted according to the Revised Format Now Permitted and, therefore, waiver of 37 C.F.R. § 1.121 is requested.¹ Reconsideration and allowance of all the claims are respectfully requested in view of the following remarks.

Election/Restriction

The Examiner notes that claims 7-12 have been withdrawn from further consideration as being drawn to a non-elected species, but notes that if claim 1 is found to be an allowable generic claim, the restriction will be withdrawn and claims 7-12 will be allowed. Accordingly, these claims remain pending.

Claim Rejections - 35 U.S.C. § 112

The Examiner rejected claims 13 and 14 under § 112, 1st paragraph, as containing subject matter not described in the specification. This rejection is now believed to be moot.

Claim Rejections - 35 U.S.C. § 102

The Examiner rejected claims 1, 3, 4, and 6 under § 102 (e) as being anticipated by US Patent 6,113,514 to Okubo et al. (hereinafter Okubo). Applicants respectfully traverse this rejection because Okubo fails to disclose every element as set forth in Applicants' claims.

Each one of claims 1 and 4 independently sets forth a toroidal-type continuously variable transmission component comprising: a rolling member comprising a contact surface for contact with another transmission component, the rolling member being made of steel and having a layer formed at a particular distance from the contact surface thereof, wherein the layer does not contain a non-metallic inclusion having a maximum diameter of a particular value or more, wherein the size of non-metallic inclusions in the layer is measured in the continuously variable transmission component.

¹ See Pre-OG Notices as posted on the PTO website at
www.uspto.gov/web/offices/pac/dapp/opla/preognotice/revamdtprac.htm.

For example, one embodiment of the invention comprises a toroidal-type variable transmission component comprising a rolling member comprising a contact surface for contact with another transmission component. The claimed layer, and the claimed maximum diameter of non-metallic inclusions therein, are important to improving the life of the rolling member. For example, as set forth in the specification, the rolling member may be the input disk, the output disk, the inner ring of the power roller, or the outer ring of the power roller. Accordingly, the contact surface may be the slide surface of the power disk, or the raceway surface of the power roller rings.²

In order to extend the life of the rolling bearing as well as to enhance the reliability of the rolling bearing, the particle diameter distribution of oxide-system inclusions in a given area to be sampled must be limited.³ However, although high-purity steel for a rolling bearing is manufactured in a highly controlled line in order to remove non-metallic inclusions which give rise to the defects of the high-purity steel, actually, it is impossible to remove all of such defects. And even in the high-purity steel, once in a great while, there can suddenly occur a defect and it is impossible to prevent such a sudden occurrence of the defect completely. Especially, a large-size inclusion is fundamentally not allowed to exist in the vicinity of the surface of the high-purity steel because it gives rise to the bending fatigue rupture of the high-purity steel in a CVT disk. For this reason, it is necessary to check all of the CVT disks and power rollers for the defects thereof.⁴

That is, even high-purity steel sometimes includes undesirable non-metallic inclusions. Accordingly, when such high-purity steel is used for the components of a CVT, the undesirable non-metallic inclusion sometimes is located near the contact surface of the component. In such a case, the CVT component will not have a long useful life. On the other hand, even if such an undesirable non-metallic inclusion exists, if the undesirable non-metallic inclusion is a certain

² Specification at: page 28, lines 23-26; page 4, 1st paragraph; page 12, line 4 - page 14, line 16; page 23, line 6 - page 25, line 12.

³ Specification at page 1, lines 10-22.

⁴ Specification at page 2, 2nd full paragraph.

distance from the contact surface of the CVT component, it will not adversely affect the useful life of the CVT component. Accordingly, Applicants' invention ensures that no such undesirable non-metallic inclusions are located within the certain distance from the contact surface of the CVT component.

On the other hand, Okubo discloses a raw material having a certain size of non-metallic inclusions therein. Therefore, Okubo does not disclose a rolling member having a contact surface, and a layer formed at a certain distance from the contact surface, wherein the layer does not contain a non-metallic inclusion having a maximum diameter or more, and further wherein the size of non-metallic inclusions in the layer is measured in the continuously variable transmission component, as set forth in each of claims 1 and 4.

Further, for the sake of argument, Okubo's raw material inherently will include undesirable non-metallic inclusions as noted above. Accordingly, even if one of ordinary skill in the art were motivated to make a CVT component from Okubo's raw material, there is no guarantee that it will not have undesirable non-metallic inclusions near its contact surface. In contrast, Applicants claim a CVT rolling member wherein there is ensured—because the measurement for inclusions is in the CVT component itself—that there will be no non-metallic inclusions of a certain size at a certain distance of its contact surface. By making this assurance, Applicants' CVT rolling member achieves a longer useful life.

At least for any of the above reasons, Applicants' claims are not anticipated by Okubo

Claim Rejections - 35 U.S.C. § 103

The Examiner rejected claims 13 and 14 under § 103 (a) as being unpatentable over Okubo. This rejection is now believed to be moot.

The Examiner rejected claims 1, 3, 4 and 6, under § 103(a) as being unpatentable over US Patent 5,855,531 to Mitamura et al. (hereinafter Mitamura) in view of Japanese Reference 06-287710 (hereinafter JP '710). Applicants respectfully traverse this rejection because the references fail to teach or suggest every element as set forth in Applicants' claims.

Mitamura and JP '710 disclose non-metallic inclusions of a certain size.

However in the present invention, a defect position near a contact surface—such as, for example, a raceway surface 2 of sample 2 (CVT Input disk 2)—is detected (page 22, line 20 - page 23, line 5). As noted above, Applicants ensure that if any non-metallic defects are present in the material used to form the rolling member, those defects are present at a position wherein they do not affect the useful life of the CVT.

Applicants perform an inspection for defects not on a raw material but in the shaped rolling member of the CVT disk itself. As described above, it is more certain to inspect in a state of a CVT disk or of a power-roller than to inspect such in a raw material state. Therefore, the CVT according to the present invention is more certainly not to include non-metallic inclusions exiting near a contact surface, thereby increasing the useful life of the CVT.

On the contrary, Mitamura never discloses to inspect the diameter of non-metallic inclusions at a certain distance from a contact surface of a rolling member. Further JP '710 merely discloses to make a test piece from a material and to inspect a diameter of non-metallic inclusion. None of the references teach or suggest a rolling member comprising a contact surface for contact with other transmission components, the rolling member having a layer formed at a certain distance from the contact surface thereof, wherein the layer does not contain a non-metallic inclusion having the maximum diameter of a certain size or more, as independently set forth in Applicants' claims 1 and 4. That is, because the presence of undesirable non-metallic inclusions cannot be guaranteed, even if the raw material is specified to contain non-metallic inclusions less than a certain size, the prior art cannot guarantee that a rolling member of a CVT will have the non-metallic inclusions of a certain size or less at a predetermined distance from the contact surface thereof.

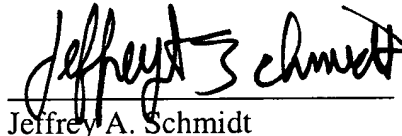
Accordingly, for at least the above reasons, Mitamura and JP '710 fail to render obvious Applicants' claims.

Conclusion

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,



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